

PATENT SPECIFICATION

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(54) DEVICE FOR REMOVING PAINT FROM A SURFACE

(71) We, RUPHUS RAPHAEL WENDROW, of 163 Tulbatch Street, Worcester, Cape Province, 6850 and DAVID BAREND FOURIE, 19 Swellengrebel Street, Swellendam, Cape Province, 6740, Republic of South Africa, both citizens of the Republic of South Africa, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a device for removing a layer or coating from a surface.

The removal of paint or wall paper from a surface and the preparation of the surface for applying a fresh coating has always been a long and laborious process, the length of time taken increasing the cost of the whole operation. Many devices have been proposed for such a cleaning operation, but they have all failed to be effective in use because of any high prime cost, inefficient scrapping, or being too heavy to conveniently handle.

It is an object of the invention to provide a device for removing a coating or layer from a surface quickly and efficiently.

According to the invention there is provided a device for removing a layer or coating from a surface, comprising a frame; an elongate abrasive member mounted on the frame for rotation about an axis; means to drive the abrasive member; means for controlling the depth of skim of the abrasive member; and axial fan means positioned to blow air along the rotational axis of the abrasive member.

Preferably the skim control means is adjustable and conveniently the skim control means is a guard that partially encloses the abrasive member and is formed with a slot through which a portion of the abrasive member protrudes. The guard protects an operator from the non-operating surfaces of the abrasive member.

The abrasive member may take a number

of basic forms. Firstly, it may be a drum provided with rasp like projections, the drum being suitably modified if it is to be used on corrugated surfaces as corrugated iron roofs. Secondly, instead of rasp-like projections, the drum may be provided with bristles in the form of steel pins allowing "give" while being strong enough to remove paint. With these abrasive members the fan means is an axial fan mounted inside the drum. Thirdly, the abrasive member may be a scraper blade or plurality of scraper blades. Preferably the blades are helical so that their profile is adapted to act as an axial fan when it is rotated.

In order to illustrate the invention, examples are now described with reference to the accompanying drawings in which:

Figure 1 shows diagrammatically a front elevation of a device for removing paint from a surface,

Figure 2 shows a detail of the device of Figure 1,

Figure 3 shows an abrasive drum to be used in conjunction with the device of Figure 1 on a substantially level surface,

Figure 4 shows an abrasive drum to be used on a corrugated surface, for example, a corrugated iron roof,

Figure 5 shows an alternative embodiment of the device of the invention,

Figures 6 and 7 show front and side views respectively of an abrasive member which is a helical scraper blade,

Figures 8 and 9 show alternative embodiments of adjustable guards for the abrasive member which serve as skin control means, and

Figure 10 is another embodiment of frame for supporting the abrasive member.

Referring to Figure 1, there is shown a skeletal, cylindrical barrel 10 provided with longitudinal ribs 12. The barrel 10 is mounted on a shaft 14 which is driven by an electric motor 16 through a belt 18, pulleys 20 and

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a gear box 21. A frame for the barrel 10 and the motor 16 comprises two stiff, spaced apart parallel members 22 and 24. The member 24 is provided with an elbow joint 28 which allows a portion of the member 24 to be pivoted to the side so that the barrel 10 can be removed from the shaft 14. A sleeve 26 is provided on the member 24. In one position the sleeve 26 exposes the elbow joint 28, and in another position fits snugly over and locks the elbow joint 28. A stop 26a is fitted to prevent the sleeve from sliding beyond the elbow 28.

The frame further includes a cross member 30 on which the motor 16, such as a power drill, is mounted by means of clamps 32.

The frame is further reinforced by a cross member 40 which is provided with extensions to form handles 42 for holding the device.

An axial fan 36 is located on shaft 14. A bag 38, which is supported on the member 24, is provided to receive removed scrapings blown by the fan 36 through an inlet part 34 and a connecting pipe 37.

Figures 3 and 4 show embodiments of abrasive drums 44 which may be fitted to the drum barrel 10 of Figure 1 depending on whether the surface to be prepared is substantially level or corrugated. Each of the drums 44 is made of a hard wearing alloy such as stainless steel and is provided with rasp-like protrusions 46. Alternatively, as shown in Figures 8 and 9, the drum may be provided with bristles, say in the form of steel pins, which would allow a certain amount of "give" resilience while being strong enough to remove paint. In practice, the appropriate drum 44 is selected, the sleeve 26 is elevated along member 24 to expose the elbow joint 28, the lower portion, in Figure 1, of member 24 is pivoted to the side and the drum is located over the barrel 10 with the ribs 12 holding the drum 44 in position.

A guard plate 41 is positioned on the members 22 and 24 by means of locking members 43 in such a way that, firstly, the operator is protected from the abrasive surface of the drum 44 and that, secondly, the depth of skim of the abrasive surface is such as to prevent undue scarring of the surface being prepared. Referring to Figures 8 and 9, it will be seen that the guard plate 41 may take a number of forms. In Figure 8 the guard comprises two portions 60 and 62 of a cylinder which overlap each other partially. The cylindrical portion 60 is provided with two threaded pins 64 which protrude outwardly. The cylindrical portion 62 has two slots, 65, which are in register with the pins 64. In practice one of the cylindrical portions is fixed to the members 22 and 24 of the frame and the other portion is secured to the first portion by having the pins passing through the slots 65 and tightened down with a wing nut or the like. Sliding the portions

relatively to one another increases or decreases the size of the opening of the guard to control the depth of skim.

In Figure 9 the guard 41 comprises two strips 66 which define a slot through which the drum may protrude, and a cylindrical cover extending around the drum and fixed at either side to a strip 66. The strips 66 may be connected to the side members 22 and 24 in any convenient manner; but preferably slides 68 are provided on the ends of the strips, the slides having slots through which a bolt provided on the members may pass. Moving the slides relatively to the bolt will affect the amount that the drum protrudes through the slot between the strips 66. The bolts, where they engage the slides 68, may also be off-set or eccentric, so that on rotation of the bolt the slide will move up or down the members 22, 24. This will allow for fine adjustment of the guard and depth of skim.

The device of Figure 5 is intended to facilitate the cleaning of perpendicular surfaces. An adjustable U-shaped support 46 capable of being angled away from the members 22 and 24 is connected to them at the level of the handles 42. The support 46 is provided with a roller 48 which, in use, rests on the surface to be abraded. The support 46 may be secured in any position relatively to the members 22 and 24 by means of a wing-nut 50. The support 46 may be a separate attachment which is only secured to the members 22, 24 when required.

In use, the motor is switched on and the revolving drum 44 is applied to the surface to be prepared. The removed paint will pass through the holes formed by the rasp-like protrusions 46 and will be blown by the fan 36, through the pipe 37 into the bag 38 from which the paint will later be removed.

In Figure 10 is shown another embodiment of the scraper device, in which the members 22 and 24 are provided on the same side of the abrasive drum 44. The members are spaced apart slightly by plunger blocks 23 so as to give rigidity to the frame. Similar guards 41 as described previously will be provided around the abrasive drum to protect the operator and control the depth of skim. The advantage of this embodiment is that it will allow the drum face to reach into the corners of a room. On reversal of the rasp-like drum and the revolution of the motor the machine may be used in an opposite corner.

In order to support the drum adequately, the skeletal barrel may be replaced with a shaft supported in bearings provided on both of the members 22 and 24. A concave flange, the concavity of which extends into the drum, is provided at the free end of the shaft to secure the abrasive drum to the shaft. This construction allows the end of the drum to reach well into a corner without being obstructed by the flange.

Referring specifically now to Figures 6 and 7 there is shown a helical scraper blade 52 having trunnions 54 projecting from either end. The trunnions are such that they can be fitted in place of the axle 14 in any of the previous embodiments. As will be seen from Figure 7 the profile of the blade is such that it acts as an axial fan when it is rotated. In all other respects this blade operates similarly to the abrasive drum described previously.

WHAT WE CLAIM IS:—

1. A device for removing a layer or coating from a surface, comprising a frame; an elongate abrasive member as hereinbefore defined mounted on the frame for rotation about an axis; means to drive the abrasive member; means for controlling the depth of skim of the abrasive member; and axial fan means positioned to blow air along the rotational axis of the abrasive member.

2. A device as claimed in claim 1 in which the skim control means is adjustable.

3. A device as claimed in either of claims 1 or 2 in which the skim control means comprises a guard that partially encloses the abrasive member and is formed with a slot through which a portion of the abrasive member protrudes, so that, in use, the surfaces of the guard around the slot can be placed against the surface to be abraded to hold the abrasive member at a fixed distance relative to the surface to be abraded.

4. A device as claimed in any one of the previous claims in which the abrasive member is a drum provided with rasp-like protrusions.

5. A device as claimed in any one of claims 1 to 3 in which the drum is provided with bristles.

6. A device as claimed in either of claim 4 or claim 5 in which the drum is corrugated, so that the device can remove a layer or coating from a corrugated surface.

7. A device as claimed in any of claims 4 to 6 in which the abrasive drum is mounted on a skeletal barrel having longitudinal ribs parallel to the axis of rotation of the drum, which ribs engage the drum.

8. A device as claimed in any one of claims 4 to 7 in which the fan means is an axial fan located within the drum.

9. A device as claimed in any one of claims 1 to 3 in which the abrasive member is a scraper blade.

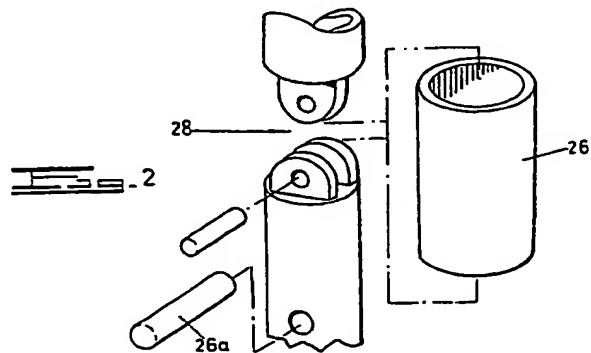
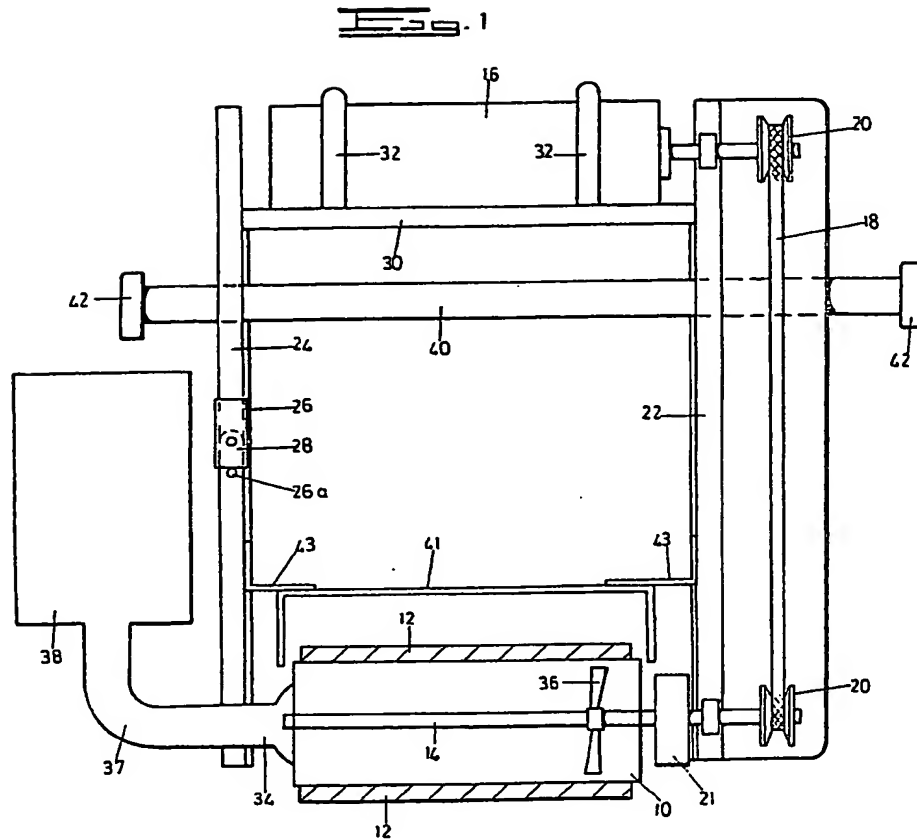
10. A device as claimed in claim 9 in which the profile of the scraper blade is helical, the profile of the blade being adapted to act as a fan when the blade is rotated.

11. A device as claimed in any one of the previous claims in which the abrasive member is rotatably mounted between two arms provided on the frame, one arm being jointed so that it can move outwardly relatively to the abrasive member to release the abrasive member.

12. A device as claimed in any one of claims 1 to 10 in which the frame is a stiff structure that firmly supports only one end of the abrasive member and the other end of the abrasive member projects beyond the structure.

13. A device for removing a layer or coating from a surface substantially as herein described with reference to and as illustrated in any one of the accompanying drawings.

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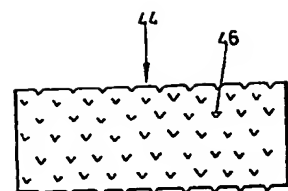


Fig. 3

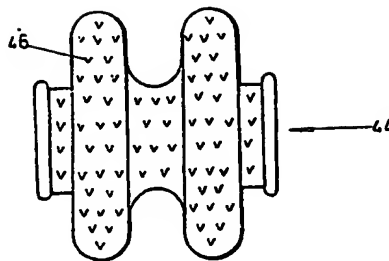


Fig. 4

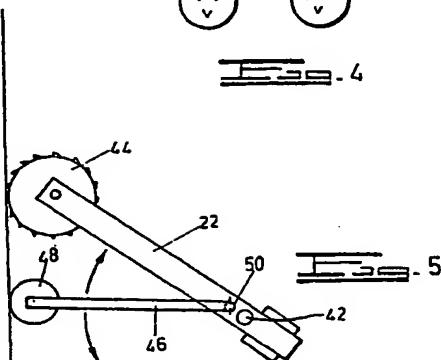


Fig. 5

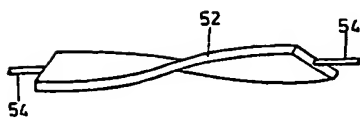


Fig. 6



Fig. 7

